PATENT CLAIMS

1. A high-temperature superconductor arrangement having a superconductor (1) and having an electrical bypass (2) which is in electrical and mechanical contact with the superconductor (1), with the superconductor (1) being at a superconductor temperature T_{SC} and the bypass (2) being at a bypass temperature T_{BP}, characterized in that the bypass (2) produces a compressive pressure on the superconductor (1) in a current flow direction (I) even when the superconductor temperature T_{SC} is below the bypass temperature T_{BP}.

2. The arrangement as claimed in claim 1, with the superconductor (1) having a first thermal coefficient of expansion α_{SC} and the bypass (2) having a second thermal coefficient of expansion α_{BP} characterized in that, at a temperature T_0 which is above the maximum operating temperature of the bypass (2):

$$\alpha_{BP} \cdot (T_0 - T_{BP}) > \alpha_{SC} \cdot (T_0 - T_{SC})$$

3. The arrangement as claimed in claim 2, with T_C being the critical temperature of the superconductor (1), characterized in that, for the maximum bypass temperature T_{BP}^{max}:

$$\frac{T_{BP}^{max} - T_C}{T_0 - T_C} < \frac{\alpha_{BP} - \alpha_{SC}}{\alpha_{BP}}.$$

4. The arrangement as claimed in claim 1, characterized in that the superconductor (1) is in strip form and has two main surfaces (10, 11) parallel to the current flow direction (I), and in that the bypass (2) is in contact with the superconductor (1) via both main surfaces (10, 11).

5. The arrangement as claimed in claim 4, characterized in that the superconductor has two layers which are separated by an electrical insulator and in which the current flows essentially in the opposite direction.

6. The arrangement as claimed in claim 1, characterized in that the bypass (2) is made of steel and there is a solder layer or an electrically conductive adhesive layer (20) between the superconductor (1) and the bypass (2).

7. A method for producing a high-temperature superconductor arrangement having a superconductor (1) and having an electrical bypass (2) which is in electrical and mechanical contact with the superconductor (1), with the superconductor (1) being at a superconductor temperature T_{SC} and having a first thermal coefficient of expansion α_{SC}, and the bypass (2) being at a bypass temperature T_{BP} and having a second thermal coefficient of expansion α_{BP},
characterized in that the bypass (2) produces a compressive pressure on the superconductor (1) in a current flow direction (I) even when the superconductor temperature T_{SC} is below the bypass temperature T_{BP}, and in that the superconductor (1) and the bypass (2) are brought into mechanical contact, without any pressure in the current flow direction (I), at a production temperature T_0 which is above the maximum operating temperature of the bypass (2).

8. The method as claimed in claim 7, characterized in that the bypass (2) is made of steel and is brought into contact with the superconductor (1) by means of soldering or bonding.

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